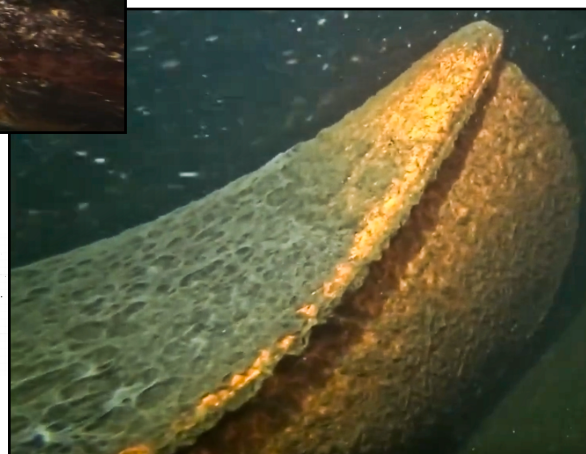
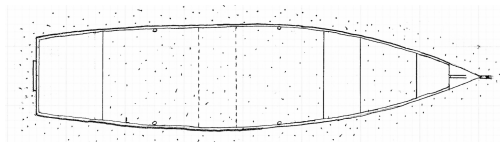


MARITIME HERITAGE MINNESOTA



Ann Merriman
Christopher Olson

Suburban Lakes Nautical Archaeology 2 Project Report: Lake Pulaski



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Mascots & Computing Cats
Weebles Cat & Rodney Cat



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Trustee
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"ACHF grants have allowed a small St. Paul-based nonprofit, Maritime Heritage Minnesota (MHM), to re-establish the discipline of underwater archaeology in Minnesota. Without this support, MHM could not have conducted its groundbreaking nautical archeological and maritime historical research."

~Steve Elliott, Former Minnesota Historical Society CEO and Director, January 2015

Introduction

Wrecks and the artifacts associated with them tell a story. Removing or otherwise disturbing artifacts, treating them as commodities that can be sold, obliterates that story. Nautical archaeological and maritime sites are finite, and are significant submerged cultural resources. Nautical, maritime, underwater, maritime terrestrial – Maritime Heritage Minnesota's (MHM) deals with all of these types of sites throughout the State of Minnesota. MHM's Mission is to document, conserve, preserve, and when necessary, excavate these finite cultural resources where the welfare of the artifact is paramount. MHM is concerned with protecting our underwater and maritime sites – our shared Maritime History – for their own benefit in order for all Minnesotans to gain the knowledge that can be obtained through their study. MHM's study of wrecks does not include the removal of artifacts or damaging the sites in any way. MHM does not raise wrecks or 'hunt' for 'treasure'. Submerged archaeological sites in Minnesota are subject to the same State statutes as terrestrial sites: the Minnesota Field Archaeology Act (1963), Minnesota Historic Sites Act (1965), the Minnesota Historic District Act (1971), and the Minnesota Private Cemeteries Act (1976) if human remains are associated with a submerged site. Further, the case of *State v. Bollenbach* (1954) and the Federal Abandoned Shipwrecks Act of 1987 provide additional jurisdictional considerations when determining State oversight and "ownership" of resources defined by law as archaeological sites (Marken, Ollendorf, Nunnally, and Anfinson 1997, 3-4). Therefore, just like terrestrial archaeologists working for the State or with contract firms, underwater archaeologists are required to have the necessary education, appropriate credentials, and hold valid licenses from the Office of the State Archaeologist (OSA).



Respect the Diver Down Flag



Preface

In 2016, during the Minnesota Suburban Lakes Survey Project (MSLS), MHM surveyed Upper and Lower Prior Lake (1,238 acres, Scott County), Lake Pulaski (702 acres, Wright County), Medicine Lake (886 acres, Hennepin County), Lake Johanna (213 acres, Ramsey County), Lake Sylvia (1,524 acres, Wright County), and Lake Elmo (206 acres, Washington County). Other MHM sonar survey and underwater archaeology projects have taken place in Lake Minnetonka, White Bear Lake, Lake Waconia, the Headwaters Mississippi River, and the Minnesota River. In 2017, during the Minnesota Suburban Lakes Nautical Archaeology 1 Project (MSLNA-1), MHM investigated 14 anomalies in Prior Lake, 10 anomalies in Lake Pulaski, and 5 anomalies in Lake Waconia in Carver County in order to answer specific questions about their natures. After the completion of the MSLNA-1 Project fieldwork, there is now 1 identified wreck on the bottom of Lake Waconia, 7 wrecks and 1 object in Lake Pulaski, and 3 wrecks, 3 maritime sites or objects, and 2 'other' site types on the bottom of Prior Lake. The anomalies were identified through underwater archaeological reconnaissance fieldwork using SCUBA, digital video, measured drawings, and maritime historical research. Of these 11 wrecks, 3 of them now have Minnesota archaeological site numbers.

Results of the Minnesota Suburban Lakes Nautical Archaeology 2 Project

Research Design

The purposes of the MSLNA-2 Project was to conduct targeted and comprehensive remote sensing sonar surveys using new and improved sonar equipment; and use underwater archaeological reconnaissance to answer questions about and determine the nature of specific anomalies. The lakes focused on during the project are Prior Lake, Lake Pulaski, Medicine Lake, and Lake Johanna. The targeted sonar scanning undertaken in Prior Lake and the comprehensive scanning undertaken in Lake Pulaski, Medicine Lake, and Lake Johanna greatly assisted MHM during data review; dozens of anomalies were identified as wrecks, objects, or false targets using only their acoustical signatures.

Methodology

The use of improved sonar equipment to record images with increased detail and clarity directly affected underwater archaeological reconnaissance by facilitating efficient dive planning. Specifically, it eliminated the need to dive on dozens of anomalies that turned out to be false targets - unusual bottom contours, rocks, and trees. Further, MHM can identify maritime sites such as docks, boat lifts, dock canopies, and steam boilers to determine if dive reconnaissance on those objects is necessary, depending on their location and other factors. For the MSLNA-2 Project, dozens of anomalies in the 4 lakes were identified as false targets - determined by their acoustical signature and comparisons with previously recorded sonar data - without diving on them. In addition, the new equipment allowed MHM to record detailed acoustical signatures of known wrecks and other sites to further our knowledge about them; this ability is particularly useful in low visibility waters. Using data accumulated from the fieldwork as a starting point, MHM conducted research to place newly recognized nautical archaeological sites

and anomalies into their historical contexts. Minnesota Archaeological Site Forms were filed with the OSA when appropriate.

Results

After the completion of the MSLNA-2 Project fieldwork in late October 2018, there are now 9 identified wrecks, 1 maritime site, 3 objects, and 2 possible wrecks in Lake Pulaski; 3 identified wrecks, 1 unidentified wreck, 3 possible wrecks, 5 possible maritime sites, 3 'other' objects, and a series of barrels and poles on the bottom of Medicine Lake; 2 wrecks, 4 maritime sites, 2 'other' objects, and 6 possible wrecks in Lake Johanna; and 3 identified wrecks, 1 unidentified wreck, 5 possible wrecks, 9 maritime sites, and 6 other sites or objects on the bottom of Prior Lake. Some of the sites and objects have not been dove upon yet, but may be investigated using SCUBA in the future. The anomalies were identified through underwater archaeological reconnaissance fieldwork using SCUBA, digital video, measured drawings, improved side and down-imaging sonar, and maritime historical research. Of the 17 identified wrecks in these 4 lakes, 7 of them now have Minnesota archaeological site numbers. During the MSLNA-2 Project specifically – MHM and its volunteers identified 7 new wrecks, 11 new submerged maritime sites, 8 'other' objects, and confirmed the existence of 2 other wrecks using sonar.



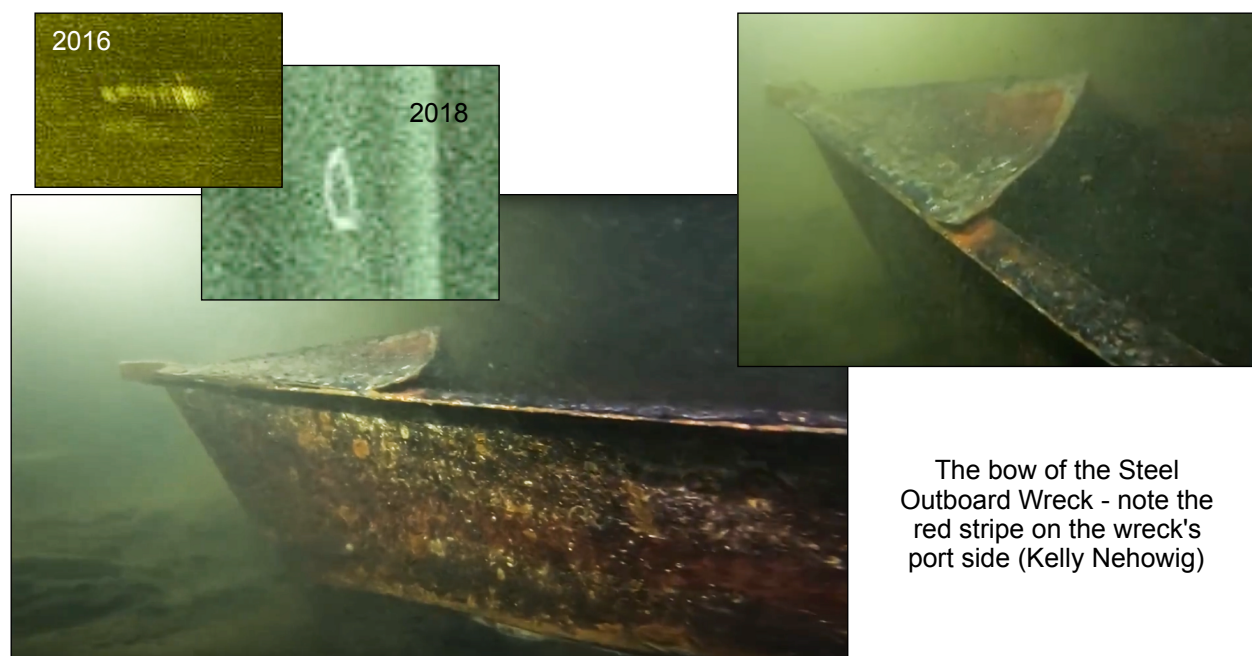
Lake Pulaski (USGS)

Lake Pulaski Project Results

During the MSLNA-2 Project, MHM's targeted side and down imaging sonar re-scanning of Lake Pulaski using updated sonar equipment allowed for the identification of 33 anomalies as false targets comprised of bottom contours or vegetation (A3-A6, A9-A11b, A14, A16, A18, A21-A23, A25, A26, A28, A33-A35, A37, A40-A42, A44-A50, A53, A54), 3 anomalies are rocks or rock fields (A11, A33-A35), and 2 are trees (A52, A57) - without dive reconnaissance. In 2018, using the improved sonar data and dive reconnaissance, 2 anomalies (A30, A51) were identified as wrecks, Anomaly 55 is a fishing site, and 2 'other' objects (A56, A7) were documented. Anomalies 58 and 59 remain unidentified and they are possibly wrecks.

Steel Outboard Wreck, 21-WR-206 (Anomaly 30)

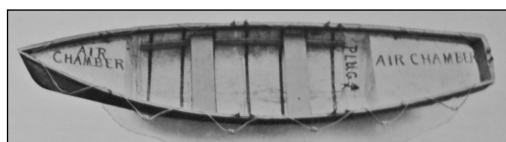
The ambiguous 2016 survey image of Anomaly 30 resembled other anomalies identified as wrecks recorded in other lakes - and the sonar data produced during the MSLNA-2 Project confirmed its nature. The Steel Outboard Wreck was identified in mid-October 2018. The wreck is 15.00 feet long, 3.60 feet in the beam, and 2.60 feet wide at the transom. The square transom has sharply pointed corners and a thick wooden motor board attached to it on the outer hull. The pointed bow has a towing loop protruding from it. A small triangular sheet metal foredeck - bent into a small peak - is painted red over remnants of black paint. The extruded steel gunwale was created by the shaping of the metal itself, bent at a 90-degree angle outward from the hull. The gunwale has a separate flat metal caprail attached to it, painted black. Oarlocks are attached to the gunwale on port and starboard, 2 on each side. An L-shaped metal piece, possibly a bracket to secure a bait can, is located on the starboard side aft of the aft-most oarlock. The wreck has 4 benches; the forward-most bench is a triangular shape and the stern bench is broad and wide. The fore and aft benches are constructed to be airtight and assist with flotation should the vessel be swamped. The outer hull is painted white with a wide red stripe along both sides of the wreck.



The bow of the Steel Outboard Wreck - note the red stripe on the wreck's port side (Kelly Nehowig)



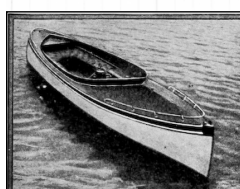
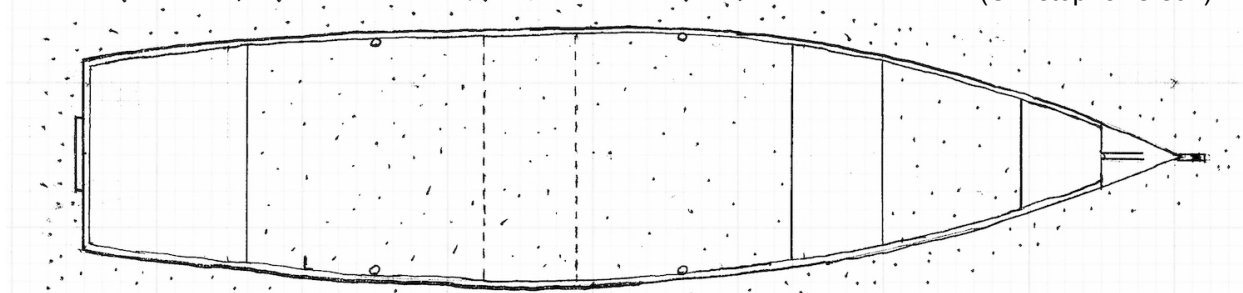
The Steel Outboard Wreck is similar to the Steel Boat Wreck 2 (21-WA-115), identified in 2014 by MHM on the bottom of White Bear Lake. Both wrecks have extruded steel gunwales, airtight fore and aft compartments under benches - with a broad and wide stern seat. Anomaly 30 and 21-WA-115 are similar to early W. H. Mullins Company pressed steel boats whose production began in the 1890s. MHM contends Anomaly 30 may be a Mullins brand vessel, but it is more likely the wreck is a Minnesota-built boat, possibly produced by one of the Minneapolis firms that include the Minneapolis Steel Boat Company, O'Hara's Boat Company, and Sanderson's Boat and Engine Company (*Minneapolis Journal* 1905; *Minneapolis Tribune* 1904, 1905). Further, Anomaly 13 - also wrecked on the bottom of Lake Pulaski - is suggestive of Anomaly 30 in design with a broad aft bench. Minnesota boat registration data indicated Anomaly 13 was of homemade construction in 1956 (Merriman and Olson 2017, 9). MHM contends, when comparing the construction and design of Steel Outboard Wreck, Anomaly 13, and 21-WA-115, Anomaly 30 reflects attributes commonly incorporated into small steel boats in the 1930s. Anomaly 30 sank before July 1, 1959 due to her lack of a registration number. MHM submitted an archaeological site form for the wreck to the OSA in late December 2018 and received her site number, 21-WR-206, at that time.



2 ft

N

A sketch of the Steel Outboard Wreck (Christopher Olson).



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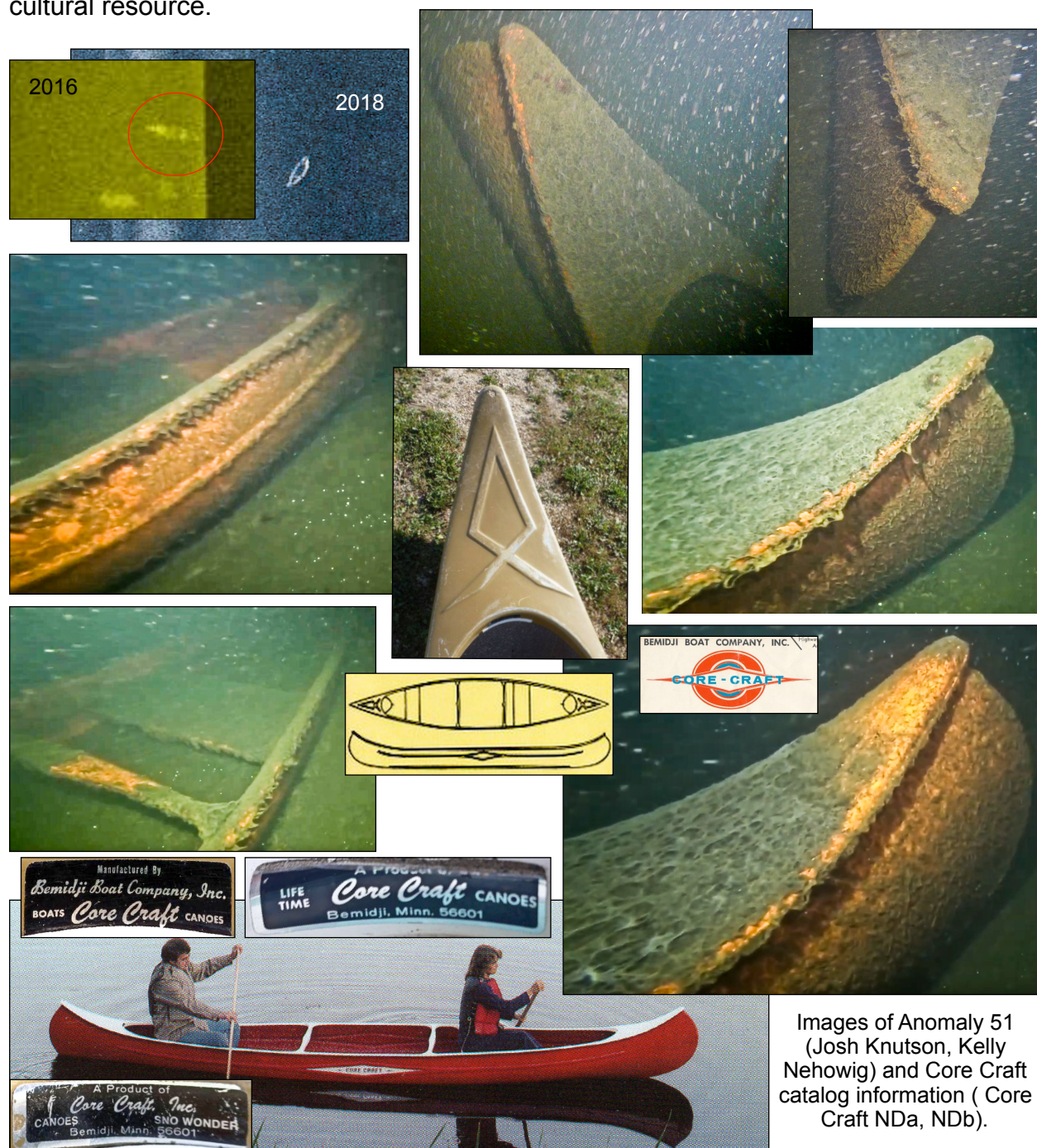
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Advertisements for metal boats available for Minnesotans to buy in the late 19th and early 20th Centuries (Hibbard, Spencer, Bartlett & Company 1927, 2058; Minneapolis Journal 1902, 1905a-b; Minneapolis Tribune 1904; *Popular Mechanics* 1907, 265; Rippley Steel Boat Company 1909, 21).

Red CTD-17 Core Craft Fiberglass Canoe Wreck (Anomaly 51)

In 2016 MHM recorded a sonar image of Anomaly 51 but it was not recognized as a wreck at that time. In 2018, MHM recorded a distinct image of Anomaly 51 and confirmed she is a wreck. The Red CTD-17 Fiberglass Canoe Wreck is 17.00 feet long and 3.00 feet wide in the beam amidships. Anomaly 51's ends are both pointed, but the bow and stern are distinctive due to the placement of the 2 gunwale-level carrying thwarts. According to Bemidji Boat Company promotional literature, Anomaly 51 has 3 'keels' comprised of redwood strips molded into the bottom of the hull. More accurately,

MHM labels these molded strips as longitudinal stringers because a vessel does not have a keel if it doesn't have stem and stern posts. On the outer hull, a substantial splashrail extends almost to the ends of the wreck. Amidships, on both port and starboard, the Core Craft diamond logo is formed into the hull; because of conditions, it was only seen formed on the inner hull of the wreck. On the small bow and stern decks, another Core Craft emblem that is suggestive of a campfire or a stylized arrowhead is partially seen under silt. When compared to images of Core Craft canoes in brochures and online, Anomaly 51 was probably constructed in the late 1960s to the mid-1970s. The builder's plate is probably extant, but it was covered in silt. MHM may return to the Red CTD-17 Core Craft Fiberglass Canoe Wreck in the future to clean off the hull and record the emblems and builder's plate. Anomaly 51 is a protected submerged nautical cultural resource.



Images of Anomaly 51 (Josh Knutson, Kelly Nehowig) and Core Craft catalog information (Core Craft NDa, NDb).

Fishing Spot (Anomaly 55)

MHM recorded sonar footage of Anomaly 55 in 2016 but it was an indistinct smudge on the lake bottom. In 2018, a sharp image of the Fishing Spot was recorded, characterized by a large acoustical shadow. The anomaly is comprised of a piece of engineered wood, akin to LP SmartSide, propped up off the lake bottom and held together with rope. The construction is anchored to the bottom using the ropes and concrete blocks. MHM contends the site is a spot set up to attract fish for fisherman, or it could be part of an underwater navigation course set up by a local dive group. Regardless of its purpose, Anomaly 55 is a protected submerged cultural resource.



Cauldron Fire Pit and Beer Cooler (Anomaly 56)

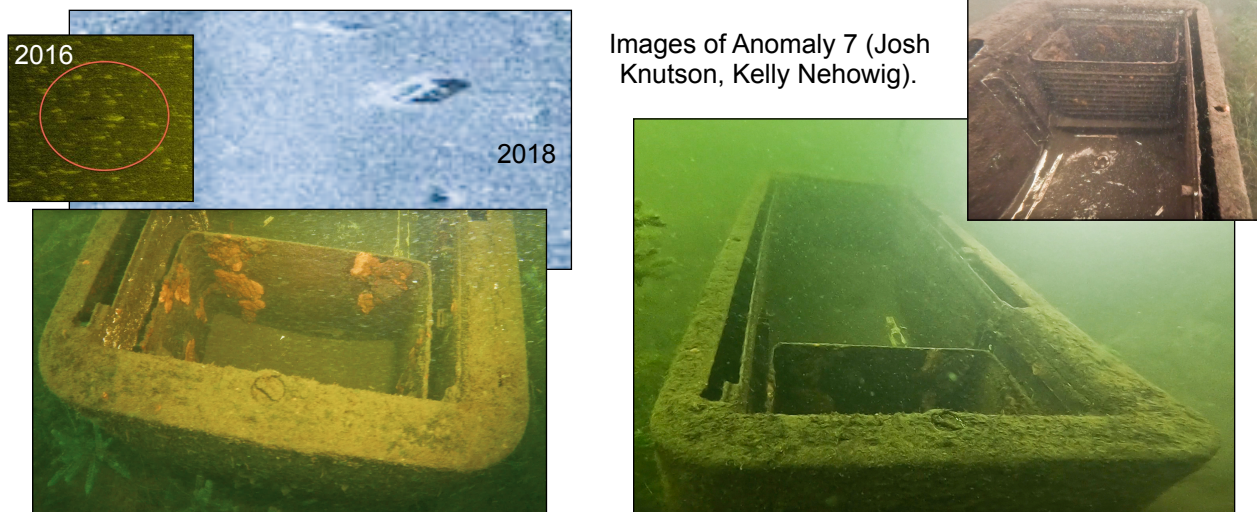
In 2016, MHM recorded sonar footage of area where Anomaly 56 is located but it was indistinct and not recognized as a cultural resource. During the MSLNA-2 Project, a sonar signature with greatly increased clarity was recorded, indicating the anomaly was a round or oval structure with a healthy acoustical shadow. Anomaly 56 is a round Cauldron Fire Pit and Beer Cooler that is 6.00 feet in diameter. The anomaly not only has 2 bottles of unopened beer in it - Grain Belt and Bud Light - sticking out of the silt, but several pieces of burned wood. MHM contends the large round steel container was a fire pit on the ice - and also holding beer - when it melted through and landed on the lake bottom. Regardless of its purpose, Anomaly 56 is a protected submerged cultural resource.





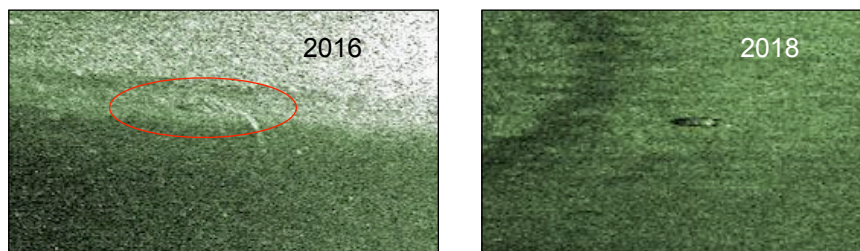
Doorless Refrigerator (Anomaly 7)

During the MSLS Project in 2016, Anomaly 7's acoustical signature was distinct enough for MHM to label it with a number. Therefore, in 2018, an improves sonar image of the anomaly indicated that the object was a distinct rectangle - but its identity remained unknown. During dive reconnaissance in mid-October 2018, Anomaly 7 was identified as a doorless 1950s-1960s refrigerator. A quick survey of the area around the anomaly did not locate the door, nor was it located in the sonar footage. Anomaly 7 is 4.70 feet tall, 2.00 feet wide, and protrudes 1.80 feet off the lake bottom. Regardless of its purpose as a refrigerator that cannot fulfill its job on the bottom of Lake Pulaski, Anomaly 7 is a protected submerged cultural resource.



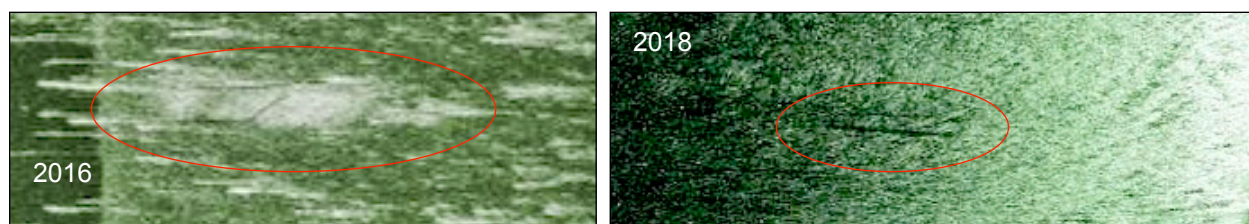
Possible Small Wreck (Anomaly 59)

In 2016, MHM recorded an image of Anomaly 59 that was obscure and somewhat fuzzy. In 2018, the anomaly is definitive, appears to be a small wreck; if it is a wreck, however, it appears to be rather small. Therefore, it may be a snowmobile or other object, or the size discrepancy is due to a variation in sonar data. Anomaly 59 will be investigated using SCUBA reconnaissance in the near future.



Possible Wreck (Anomaly 58)

In 2016, MHM recorded an image of Anomaly 58 and it did not appear to be a cultural resource. In 2018, the anomaly's acoustical signature is more definitive and it seems to be rectangular. It may be a wreck or maritime site, possibly a small barge or dock section and will be investigated using SCUBA reconnaissance in the near future.



Conclusion

MHM identified 7 wrecks on the bottom of Lake Pulaski during the MSLNA-1 Project in 2017: the Wooden Rowboat Wreck (21-WR-203), Homemade Steel Outboard Motor Boat Wreck (Anomaly 13), Fiberglass Bowrider Wreck (Anomaly 17), Capsized Pontoon Wreck 1 (Anomaly 32), Fiberglass Fishing Boat Wreck (Anomaly 36), Capsized Pontoon Boat Wreck 2 (Anomaly 38), and the Starcraft Boat Wreck (Anomaly 43). MHM's targeted re-scanning of Lake Pulaski using improved down and side-imaging sonar during the MSLNA-2 Project produced significantly more detailed data. This sonar footage was used to identify the Steel Outboard Wreck (21-WR-206) and the Red CTD-17 Core Craft Fiberglass Canoe Wreck (Anomaly 51) in 2018. Fieldwork and historical research into the histories and archaeology of the 9 wrecks on the bottom of Lake Pulaski may be conducted in the future, along with the investigation of Anomalies 58 and 59. Further, the disposition of the odd Cauldron Fire Pit and Beer Cooler (Anomaly 56) on the bottom of the lake is unknown, regardless of MHM's hypothesis about its story.

As a whole, the MSLNA-2 Project produced interesting and significant results investigating 14 anomalies in 4 lakes in 4 counties using SCUBA. MHM dove upon and identified 7 wrecks, recognized an additional 2 wrecks in sonar data that will be targeted during future research, 14 possible wrecks, 11 maritime sites or objects, and 8 'other' objects in Prior Lake, Lake Pulaski, Medicine Lake, and Lake Johanna. Of the 7 wrecks, MHM acquired Minnesota Archaeological Site Numbers for 5 of them: 1 in Lake Pulaski, 3 in Medicine Lake, 1 in Lake Johanna. The wrecks in Medicine Lake and Lake Johanna are the first underwater archaeological sites identified in these lakes.

The wrecking processes responsible for the creation of Minnesota's submerged cultural resources have produced a variety of underwater sites. Identifying, comparing, and associating these new sites in Lake Johanna, Medicine Lake, Lake Pulaski, and Prior Lake with known sites increases our understanding of the historical context within which these cultural resources operated or were exploited by Minnesotans. Future studies will greatly enhance our shared maritime history through the recognition of submerged cultural resources and the stories behind their construction and disposition. The diversity of nautical, maritime, and underwater sites so far identified by MHM in Minnesota's lakes are tangible examples of the rich maritime history of the area. Through research, diving on wrecks and anomalies to collect pertinent data, and ensuring that the collected information is accessible by the public, MHM will continue to investigate Minnesota's submerged cultural resources into the future. MHM continues to re-examine recorded sonar footage from completed remote sensing surveys. Targeted re-scanning has occurred in several lakes using knowledge gained from the comparison of anomalies that have proven to be wrecks or other submerged cultural resources in past projects. With improved technology, future scanning projects will produce clearer data. The results of the MSLNA-2 Project summarized above is connected to all the work that came before and will come after its completion. At this point, watercraft located Minnesota's suburban lakes represent approximately 1,000 years of Minnesota's maritime history and nautical archaeology. In the historic period, the known wrecks represented in these lakes span around 120 years of local maritime culture. It is clear – even through this Phase 1 pre-disturbance nautical archaeological investigation – that the types of sites that exist in Minnesota's suburban lakes documented to date are diverse, archaeologically and historically significant, and worthy of great attention.

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